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Magnetoresistivity of $\text{Ce}(\text{Pd}_{0.6}\text{Rh}_{0.4})_2\text{Si}_2$

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The tetragonal compounds CePd_2Si_2 and CeRh_2Si_2 order antiferromagnetic at $T_N = 10.3$ K and 36 K respectively. The alloys $\text{Ce}(\text{Pd}_{1-x}\text{Rh}_x)_2\text{Si}_2$ show no magnetic order for $0.4 \leq x \leq 0.7$ and exhibit a specific heat $C(T) \propto -T \ln T$ characteristic of non-Fermi-liquid behaviour at low temperature [1]. Alloys in this composition range only form in the tetragonal ThCr_2Si_2 -type structure of the parent compounds upon annealing at 1200°C [1]. Our resistivity measurements on annealed alloys with $x \geq 0.6$ indicate the occurrence of two maxima in $\rho(T)$ related to Kondo scattering of the ground state (at ≈ 15 K) and to CF excited doublets (at ≈ 120 K) in agreement with recent studies [2]. We present results of both isofield and isothermal magnetoresistance (MR) measurements for fields up to $B = 8$ T and down to $T = 1.4$ K for a $\text{Ce}(\text{Pd}_{0.6}\text{Rh}_{0.4})_2\text{Si}_2$ alloy. The MR is negative and is well described by Schlottmann's single-ion Bethe-ansatz description. Values of $T_K = 9.2$ K and a Kondo moment of $0.09 \mu_B$ are obtained.

1. O. Trovarelli *et al*, J. Alloys. Comp. **275–277** (1998) 569.
2. M. Gómez Berisso *et al*, ICM 2000.